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COMPLETE SPECIFICATION

Improvements in or relating to Automobile Vehicles

We, STEYR-DAIMLER-PUCH A.G., of Oberdonau, Steyr, Germany, a German company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to an axle drive construction for motor vehicles having independently oscillatable, individually driven wheels of at least one axle. Vehicles of this kind are already known. They are particularly suitable for cross-country work, as they have the advantage that the wheels can readily adapt themselves independently of one another to the irregularities of the ground. With such vehicles it has also already been proposed to mount the wheels on swingable half-axes and to drive them individually by means of transverse jointed shafts.

The present invention has for its object greatly to simplify the construction of such vehicles and to make the axle drive capable of being easily taken apart, so that in the event of a breakdown the individual parts can be easily removed and easily replaced by new parts. According to the invention a great simplification in the construction of such vehicles is obtained, among other advantages, through the provision of a carrier, which is fixed in the vehicle frame and on which a spring is mounted rigidly or so as to swing about a horizontal axis, the said carrier forming a common block with the axle gear casing, and by mounting each transversely disposed driving shaft in the axle gear casing in a universal joint casing provided with balls and constructed so as to act at the same time as power transmission means and differential wheel. This results in a very considerable saving in space and also enables large joints to be housed in the axle casing. Easy dismantling of the drive arrangement is also ensured by further constructional features hereinafter described with reference to the accompanying drawing.

In the drawing the drive arrangement according to the invention is illustrated in section by way of example.

The frame of the vehicle consists of two longitudinal girders 1 and 2, with which the spring carrier 3 is connected. The

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wheels of each axle are suspended from the vehicle frame by means of link members 4 and a transverse spring 5 common to the wheels of both sides, this transverse spring 5 of at least one axle being connected pivotally at 17 and the transverse spring of at least one other axle being connected rigidly with the vehicle frame. The pivoted suspension of the springing from the vehicle frame is arranged either at the front axle or at the rear axle, whilst the springing of the other axle is rigidly connected to the vehicle frame. Such an arrangement obviates the disadvantages which arise in the known motor vehicles for use in rough country, having individually driven and steered wheels capable of swinging independently of one another, in which the wheels are pivotally connected to the frame by means of swinging link members and are supported by means of transverse springs, and which disadvantages are due to the circumstance, that the frame has to take up not only the normal bending stresses due to the vertical load, but also lateral forces and torsional stresses.

According to the invention the axle gear casing 6 is so connected to spring carrier 3 that the axle gear casing is connected through the intermediary of the spring carrier to the vehicle frame, the arrangement being optionally such that the spring carrier is itself constructed as the axle gear casing. Each of the transversely disposed driving shafts 7 is supported in a universal joint casing 8 provided with balls 10, each casing 8 being supported in the axle gear casing by means of a bearing 9 and being constructed so as to act at the same time as power transmission means and as the differential wheel 11 of the differential gear.

Suitably the casing 8 of the driving joint 10, which is provided with the teeth 11, is releasably connected with a ring-like part 12 which acts as the roller bearing race for the rollers 9 of an inclined roller bearing, by means of which the joint parts 8, 12 of the driving joint 10 are supported in the axle casing (rear axle casing).

In the axle casing a ring 13 is rotatably supported, which, on being displaced,

axially displaces pins 14, by which the differential can be locked. In the example shown six pins 14 are provided, the differential being locked when these pins are displaced. The locking of the differential is brought about through the pins establishing a connection of the differential casing 15 with that part of the joint 8, which is formed as the differential wheel 11.

The displacement of the ring 13 may be effected from the driver's seat, for instance by rodwork which engages at 16.

The vehicle may be so constructed that the engine is arranged above one of the axles and the clutch and the change-speed gearing are mounted at that side of the engine, which faces towards the end of the vehicle, so that the space between the axles can be made practically fully available for the useful load, for the body work and the like.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An axle drive construction for motor vehicles having independently oscillatable, individually driven wheels of at least one axle, characterised by the feature that a carrier, which is fixed in the vehicle frame and on which a spring is mounted rigidly or so as to swing about a horizontal axis, forms a common block with the axle gear casing and that each transversely disposed driving shaft is mounted in the axle gear casing in a uni-

versal joint casing provided with balls and constructed so as to act at the same time as power transmission means and differential wheel.

2. An axle drive construction, as claimed in Claim 1, characterised by the feature that the transversely disposed driving shafts are supported in the axle gear casing by means of a roller bearing or the like, preferably an inclined roller bearing, of which one race is connected to the joint casing of the driving shaft or forms a part of the joint casing.

3. An axle drive construction, as claimed in Claim 1, characterised by the feature that in the axle gear casing there is slidably arranged a control ring which is capable of being operated from the driver's seat or the like and through the displacement of which a locking of the differential gear is effected.

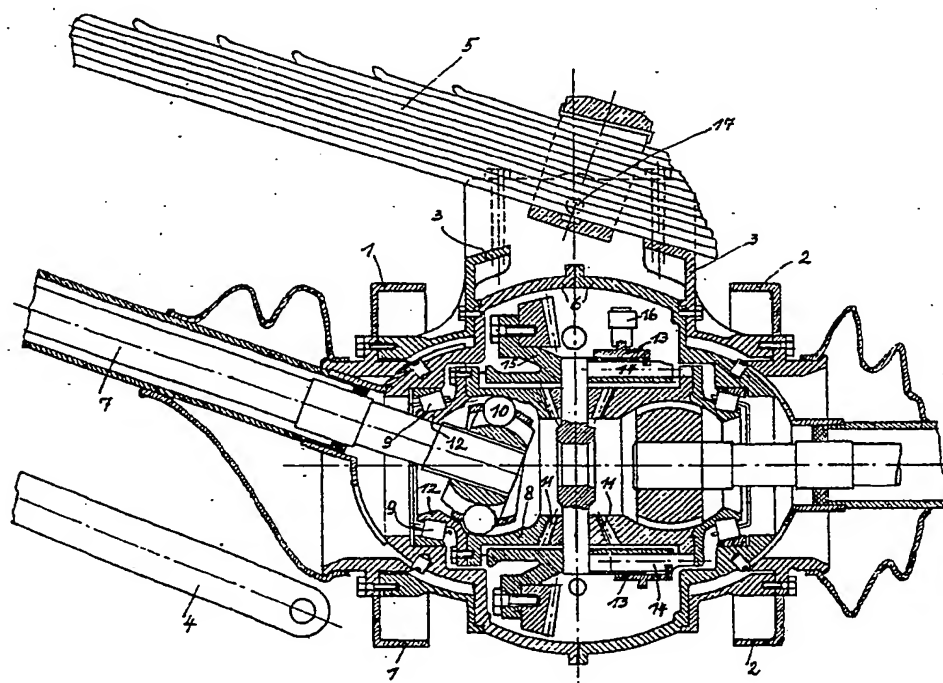
4. An axle drive construction, as claimed in Claim 3, characterised by the feature that the locking of the differential is effected by pins which in the locking position establish a connection of the differential casing with a differential wheel.

5. The improved axle drive construction for motor vehicles having independently oscillatable, individually driven wheels of at least one axle, substantially as hereinbefore described with reference to the accompanying drawing.

Dated this 18th day of October, 1938.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]



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